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(54) Title of the Invention: A Makeup Cosmetic Material

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# Specification

1. Title of the Invention  
A makeup cosmetic material.

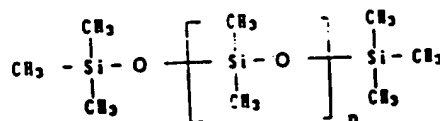
## 2. Claims

(1) A makeup cosmetic material, characterized by containing 1-70% by weight of the organic silicone resin shown under (A) below, 10-98% by weight of the volatile silicone oil shown under (B) below, and 0.5-55% by weight of powder.

- (A) An organic silicone resin composed of units having the average formula  $R_nSiO_{(1+n/2)}$  (where R is a hydrocarbon group or phenyl group having 1-6 carbon atoms, and n is a value from 1.0 to 1.8).  
(B) At least 1 of the volatile silicone oils shown in General Formula (I) and General Formula (II).

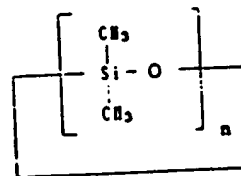
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## General Formula (I)



(In the formula, n is an integer from 0 to 5.)

## General Formula (II)



(In the formula, n is an integer from 3 to 7.)

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### 3. Detailed Description of the Invention [Fields of Industrial Use]

The present invention relates to a makeup cosmetic product, and more specifically, to an outstanding long-lasting makeup cosmetic product having favorable water resistance, perspiration resistance, and oil resistance.

In addition to ordinary makeup cosmetic materials, the term "makeup cosmetic material" used in the present invention also comprises makeup bases.

#### [Prior Art]

Makeup cosmetic materials come in a variety of forms and types, such as solid foundations composed of a mixture of powder and oil, solid foundation-oil foundations, and lipstick. Moreover, there are also emulsion foundations which have an emulsion as their base, but all of these substances are characterized by containing inorganic powders such as talc, kaolin, iron oxide, titanium oxide, titanium/mica pearl pigments, etc., and organic pigments such as nylon, cellulose, and talc pigments.

Such makeup cosmetic materials are subject to streaking, running, etc., due to oils in the skin, perspiration, or oil components of other cosmetic materials. Under high-temperature conditions in summer in particular, running of makeup is a common problem which all women would like to see solved.

Technologies for providing a makeup cosmetic material having favorable water resistance and oil resistance properties include the use of an ethyl-hydroxyethylcellulose coating material (Japanese Unexamined Patent Application No. 78-62994), but in actual practical use, such methods are unsatisfactory with respect to the gliding properties of the cosmetic.

On the other hand, cosmetic bases are also used in order to allow the makeup cosmetic material to glide on easily and to create a beautiful finish, but few of these compositions take into consideration the fact that the makeup cosmetic material should also be long-lasting.

#### [Problems to be Solved by the Invention]

In view of the above situation, the inventors of the present invention conducted thorough research in order to provide a makeup cosmetic material having outstanding properties of preventing running of makeup, and they discovered that when a particular organic silicone resin is used together with a volatile silicone oil, and a powder is then added, it is possible to provide a makeup cosmetic material which does not feel sticky, has a light, refreshing feel during use, and also prevents running of makeup, thus arriving at the present invention.

#### [Means for Solving Problems]

Specifically, the present invention comprises a makeup cosmetic material which contains 1-70% by weight of the organic silicone resin shown under (A) below, 10-98% by weight of the volatile silicone oil shown under (B) below, and 0.5-55% by weight of powder.

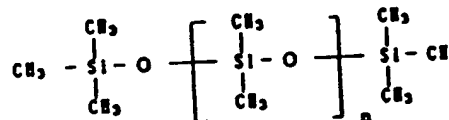
(A) An organic silicone resin composed of units having

the average formula  $R_nSiO_{(1-n)}$  (where R is a hydrocarbon group or phenyl group having 1-6 carbon atoms, and n is a value from 1.0 to 1.8).

(B) At least 1 of the volatile silicone oils shown in General Formula (I) and General Formula (II).

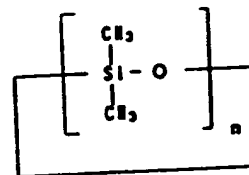
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#### General Formula (I)



(In the formula, n is an integer from 0 to 5.)

#### General Formula (II)



(In the formula, n is an integer from 3 to 7.)

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The organic silicone resin specified under (A) above used in the present invention has an appropriate composition selected from among  $R_3SiO$  units,  $R_2SiO$  units,  $RSiO_{1/2}$  units, and  $SiO_2$  units, with the blending ratio being selected so as to satisfy the average formula  $R_nSiO_{(1-n)}$  (where n indicates a value from 1.0 to 1.8), and it should preferably have an average molecular weight of approximately 1500-10000.

The above-mentioned organic silicone resin is soluble in benzene and can be manufactured by various methods. To give an example, a compound indicated by the general formula  $R_3SiX$ ,  $R_2SiX_2$ ,  $RSiX_3$ , or  $SiX_4$  (where X indicates a group for hydrolysis such as chlorine, bromine, fluorine, an alkoxy group such as methoxy or ethoxy, or an acyloxy group) is dissolved in an appropriate solvent depending on the desired resin composition, such as toluene, benzene, or xylene, and this solvent is then added to a mixture of an amount of water sufficient to produce the desired hydrolysis and co-condensation with an appropriate acidic solvent. The water phase is removed from the two-phase system obtained in this manner, the remaining resinous substance is neutralized using a sufficient amount of sodium bicarbonate or another alkaline

substance, and when the solvent is removed, the desired organic silicone resin is obtained.

The blending ratio of the organic silicone resin in the present invention is 1-70% by weight with respect to the total volume of the cosmetic material for skin use.

Both the chain-type silicone oil and ring-type silicone oil used in the present invention and indicated by General Formulas (I) or (II) above are volatile and may be used as solvents with respect to the above-mentioned organic silicone resin. Specific examples include hexamethyldisiloxane, octamethyltrisiloxane, decamethyltetrasiloxane, hexadecamethylheptasiloxane, hexamethylcyclotrisiloxane, decamethylcyclopentasiloxane, and tetradecamethylcycloheptasiloxane.

The blending ratio should be 10-99% by weight with respect to the entire volume of the cosmetic material for skin use.

Moreover, the powder used in the present invention may be any powder commonly used in makeup cosmetic materials, including inorganic powders such as talc, mica, kaolin, calcium carbonate, zinc bloom, titanium dioxide, red iron oxide, yellow iron oxide, black iron oxide, ultramarine, Prussian blue, chromium hydroxide, bismuth oxychloride, and titanium/mica pearl pigment, organic powders such as Red No. 201, Red No. 202, Yellow No. 5 aluminum Lake, Blue No. 1 aluminum Lake, resin powders such as nylon, cellulose, and polyethylene, and various metallic soaps.

The blending ratio of the above substances should be 0.5-55% by weight with respect to the total volume of the makeup cosmetic substance.

Of course, in addition to the above essential components, by blending in water and appropriate surface-active agents and taking advantage of emulsion technology, it is possible to produce a water-in-oil or oil-in-water emulsion-type makeup cosmetic material which has outstanding properties of preventing running of the makeup.

Depending on the desired application, in addition to the above substances, it is also possible to blend oils and fats, waxes, medicinal preparations, aromatic agents, or other volatile components into the makeup cosmetic material of the present invention in an amount which does not have an adverse quantitative or qualitative effect on the action of the invention.

The following is a description of the invention in further detail by means of practical examples. The invention is not limited to these practical examples. All blending ratios are given in % by weight.

Practical Example 1. Oil foundation	25.0
(1) Kaolin	15.0
(2) Titanium dioxide	3.0
(3) Iron oxide	4.0
(4) Microcrystalline wax	5.0
(5) Liquid paraffin	1.0
(6) Sorbitan sesquioleate	

- |   |                    |
|---|--------------------|
| (7) Organic silicone resin having a molecular weight of approximately 3000, a ratio of $(CH_3)_2SiO_{1.2}$ units to $SiO_2$ units of 1.5, and an average formula of $(CH_3)_{1.5}SiO_{1.1}$ | 2.0                |
| (8) Octamethylcyclotetrasiloxane  | Remaining amount   |
| (9) Aromatic agents   | Appropriate amount |

After stirring and dissolving components (4)-(8) at 70-80°C, components (1)-(3) are added and dispersed. After de-aeration, component (9) is added, and a specified container is filled to obtain an oil foundation.

The oil foundation of Practical Example 1 is a makeup cosmetic material with outstanding water resistance, oil resistance, and perspiration resistance which shows little running of makeup and also provides a light, refreshing feel on use.

#### Comparison Example 1. Oil foundation

(1) Kaolin	25.0
(2) Titanium dioxide	15.0
(3) Iron oxide	3.0
(4) Microcrystalline wax	4.0
(5) Liquid paraffin	5.0
(6) Sorbitan sesquioleate	1.0
(7) Ethyl-hydroxyethylcellulose	10.0
(8) Ethanol	10.0
(9) Isobar (Registered trademark) E (boiling point 116-143°C)	Residual amount
(10) Aromatic agents	Appropriate amount

After components (7) and (8) are stirred and dissolved at 70-80°C, they are dispersed in component (9), and components (4)-(6) are added, heated, and dissolved. Components (1)-(3) are added and uniformly dispersed, and after de-aeration, component (10) is added, stirring is carried out, and the mixture is poured into a specified container to obtain an oil foundation.

The following evaluations were conducted with respect to Practical Example 1 and Comparison Example 1.

Filter paper saturated with water or squalene was prepared, a nylon plate with the products of Practical Example 1 and Comparison Example 1 applied to it and dried was pressed against this paper, and the plate was then moved upward and downward 10 times. After completion of the upward and downward movement, the degree of transferral of the sample from the nylon plate to the filter paper was evaluated based on visual observation of the darkness of color.

#### [Evaluation Score]

- |   |                        |
|---|------------------------|
| 1 | No transfer whatsoever |
| 2 | Slight transfer        |
| 3 | Marked transfer        |

The results are shown in Table I as average values for 5 measurements.

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Table I

	Water	Squalene
Practical Example 1	1.0	1.0
Comparison Example 1	2.2	2.8

Compared to the substance of Comparison Example 1, a conventional long-lasting oil foundation, the substance of Practical Example 1 showed favorable resistance to water and squalene, thus showing that it is a makeup cosmetic material which has favorable water resistance and oil resistance properties and is long-lasting.

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#### Practical Example 2. Liquid lipstick

- |  |                    |
|--|--------------------|
| (1) Dimethylsiloxane 0.65 cs (n = 0)   | 20.0               |
| (2) Dimethylsiloxane 2.0 cs (n = 3)  | 20.0               |
| (3) Organic silicone resin having a molecular weight of approximately 5000, a ratio of $(\text{CH}_3)_2\text{SiO}_{1/2}$ units to $\text{SiO}_2$ units of 0.5, and an average formula of $(\text{CH}_3)_{1.5}\text{SiO}_{1.5}$ | 40.0               |
| (4) Glyceryl triisostearate  | 10.0               |
| (5) Red No. 226  | 10.0               |
| (6) Aromatic agents  | Appropriate amount |

Components (1)-(3) are stirred and melted at 50-60°C, and in a separate operation, components (4) and (5) are treated with a roller, added, and dispersed. After de-aeration, component (6) is added to obtain liquid lipstick.

The liquid lipstick of Practical Example 2 shows outstanding water resistance, oil resistance, and perspiration resistance, and is also resistant to running as a result of adhesion to cups, etc. It also has a light, refreshing feel during use.

#### Practical Example 3. Mascara

- |  |                    |
|--|--------------------|
| (1) Dimethylsiloxane 1.5 cs (n = 2)  | 4.5                |
| (2) Octamethylcyclotetrasiloxane   | 10.0               |
| (3) Organic silicone resin having a molecular weight of approximately 2000, a ratio of $(\text{CH}_3)_2\text{SiO}_{1/2}$ units to $\text{SiO}_2$ units of 0.8, and an average formula of $(\text{CH}_3)_{1.2}\text{SiO}_{1.2}$ | 70.0               |
| (4) Black iron oxide   | 15.0               |
| (5) P.O.E. (20 moles) sorbitan monolaurate   | 0.5                |
| (6) Aromatic agents  | Appropriate amount |

Components (1)-(3) are stirred and dissolved at 70-80°C, and components (4) and (5) are added and dispersed. After de-aeration, component (6) is added to obtain mascara.

The mascara of Practical Example 3 is resistant to running

due to tears, etc., and also shows no adhesion to the eyelids.

#### Practical Example 4. Cosmetic base

- |   |                    |
|---|--------------------|
| (1) Kaolin  | 10.0               |
| (2) Titanium dioxide  | 5.0                |
| (3) Red iron oxide  | 0.3                |
| (4) Yellow iron oxide   | 0.2                |
| (5) Methylphenylpolysiloxane (n = 100)  | 20.0               |
| (6) Dimethylsiloxane 2 cs (n = 3)   | 10.0               |
| (7) Solid paraffin  | 5.0                |
| (8) Microcrystalline wax  | 4.0                |
| (9) Sorbitan sesquioleate   | 1.0                |
| (10) Organic silicone resin having a molecular weight of approximately 3000, a ratio of $(\text{CH}_3)_2\text{SiO}_{1/2}$ units : $(\text{CH}_3\text{H}_2)_2\text{SiO}$ units : $(\text{CH}_3\text{H}_2)\text{SiO}_{1/2}$ units : $\text{SiO}_2$ units of 0.9 : 0.1 : 0.2 : 1, and an average formula of $(\text{CH}_3)_{1.23}(\text{C}_6\text{H}_5)_{0.17}\text{SiO}_{1.23}$ | 2.0                |
| (11) Decamethylcyclopentasiloxane   | 24.5               |
| (12) Hexamethylcyclotrisiloxane   | 0.5                |
| (13) Aromatic agents  | Appropriate amount |

Components (1)-(4) are mixed and crushed. In a separate operation, components (5)-(12) are mixed and dissolved at 70-80°C. The two components are stirred and mixed, and after de-aeration, component (13) is added to obtain the cosmetic base.

The cosmetic base of Practical Example 4 allows favorable sliding of the makeup cosmetic material to be used on it and has the action of preventing running of the makeup.

#### Practical Example 5. Highlighter

- |  |                    |
|--|--------------------|
| (1) Decamethylcyclopentasiloxane   | 95.0               |
| (2) Organic silicone resin having a molecular weight of approximately 8000, a ratio of $(\text{C}_6\text{H}_5)_2\text{SiO}_{1/2}$ units : $(\text{CH}_3)_2\text{SiO}$ units of 5.67 : 1, and an average formula of $(\text{CH}_3)_{0.30}(\text{C}_6\text{H}_5)_{0.65}\text{SiO}_{1.0}$ | 4.5                |
| (3) Titanium-mica pearl pigment  | 0.5                |
| (4) Aromatic agents  | Appropriate amount |

Components (1) and (2) are added and dissolved, and components (3) and (4) are added and dispersed to obtain highlighter.

The highlighter of Practical Example 5 is resistant to running of makeup and provides a refreshing, clean feel.

#### [Effect of the Invention]

The makeup cosmetic material of the present invention is a makeup cosmetic material having favorable water resistance, perspiration resistance, and oil resistance properties which has outstanding staying power and causes little running of makeup. Moreover, its feeling of use is also characterized by ease of gliding and a light, refreshing feel.

Applicant: Shiseido Co., Ltd.